We Claim.

1. A data processing method for a hybrid ARQ type II/III on a downlink of a wideband radio communication system, wherein a serving radio network controller (hereinafter, referred to as a SRNC) which is directly connected to a user equipment to allocate wireless resources to the user equipment and provides services by interlocking with a wireless communication core network in case of a call connection and a controlling radio network controller (hereinafter, referred to as a CRNC) which controls a sharing channel of a radio network are located on the different radio network, comprising the steps of:

a) generating a radio link control – protocol data unit (hereinafter, referred to as a RLC-PDU) in a radio link control (hereinafter, referred to as a RLC) layer of the SRNC and generating a protocol data unit having RLC-PDU information needed for supporting the hybrid ARQ type II/III based on a header of the RLC-PDU (hereinafter, referred to as a HARQ-RLC-Control-PDU);

b) transmitting the RLC-PDU and the HARQ-RLC-Control-PDU to a medium access control dedicated (hereinafter, referred to as a MAC-D) treating a general user part of a MAC layer through a logical channel;

c) transmitting the RLC-PDU and the HARQ-RLC-Control-PDU of the MAC-D of the SRNC to a medium access control common/shared (hereinafter, referred to as a MAC-C/SH) treating common/shared channel part on the MAC layer of the CRNC;

d) transforming the RLC-PDU and the HARQ-RLC-Control-PDU of the MAC-C/SH of the CRNC to a transmission block and transmitting it to a physical layer of a base station through a transport channel; and

e) processing the transmission block to a radio transmission form in the physical layer of the base station and transmitting it to the base station through the physical layer.

2.   The data processing as recited in claim 1, wherein the transmission block is a first MAC-PDU and a second MAC-PDU which include the RLC-PDU and the HARQ-RLC-Control-PDU, respectively.

3.   The data processing method as recited in claim 2, wherein in the step e), at a physical layer of the base station, the transmission block is transmitted to the mobile station through a physical channel by processing to a radio transmission form, and a transport format indicator 1 (TFI1) and a transport format indicator 2 (TFI2) of the first and the second MAC-PDU, respectively, are added.

4.   The data processing method as recited in claim 3, further comprising the step of: f) storing the RLC-PDU to a buffer, extracting the RLC-PDU stored in the buffer by using the HARQ-RLC-Control-PDU, decoding the extracted RLC-PDU and transmitting the RLC-PDU to an upper layer, then transmitting a response to the radio network

5.   The data processing method as recited in claim 4, wherein the step f) includes the steps of:

f1) receiving a radio frame having the RLC-PDU and the HARQ-RLC-Control-PDU transmitted from the radio network through a physical channel, and receiving information required for performing a physical layer operation;

f2) transforming a radio frame, which has the TFI2 and the HARQ-ROC-Control-PDU, to the second MAC-PDU through the demodulation, the deinterleaving and the

decoding process and transmitting it to a MAC-C/SH of the mobile station through a transport channel;

f3) in case of performing the step f2), storing a radio frame having the RLC-PDU to the buffer, generating a data identifier for identifying the RLC-PDU stored in the buffer and transmitting the data identifier and the second MAC-PDU to the MAC-C/SH of the mobile station;

f4) receiving the second MAC-PDU having the HARQ-RLC-Control-PDU, and a data identifier from the physical layer of the mobile station, transforming the second MAC-PDU to the HARQ-RLC-Control-PDU and transmitting the HARQ-RLC-Control-PDU and the data identifier to MAC-D of the mobile station;

f5) transmitting the HARQ-RLC-Control-PDU and the data identifier to the RLC layer of the mobile station through a logical channel;

f6) interpreting the received HARQ-RLC-Control-PDU to extract a sequence number and a version number and transmitting the sequence number, the version number and the data identifier to a radio resource control (RRC) layer of the mobile station;

f7) transmitting the sequence number, the version number and the data identifier to the physical layer of the mobile station;

f8) extracting a radio frame, which has the RLC-PDU stored in the buffer, and the TFI1, by using the data identifier, and by using the TFI1, the sequence number and the version number, transforming the extracted radio frame to MAC-PDU through the modulating, the deinterleaving and the decoding process, and then transmitting the radio frame to MAC-C/SH of the mobile station;

f9) transforming the MAC-PDU to the RLC-PDU, after interpreting the MAC-PDU by the MAC-C/SH of the UE, and transmitting the RLC-PDU to the MAC-D of the mobile station;

f10) transmitting the RLC-PDU to an RLC layer of the mobile station, through a logical channel; and

f11) transmitting the RLC-PDU which is received from RLC layer of the mobile station, after interpreting the RLC-PDU and transmitting a response to the radio network.

6.   The data processing method as recited in claim 5, wherein in the step f6), the RLC layer of the mobile station interprets the received HARQ-RLC-Control-PDU and after extracting a sequence number and a version number, transmits the sequence number, the version number and the data identifier to an RRC layer of the through CRLC-HARQ-IND primitive.

7.   The data processing method as recited in claim 5, wherein in the step f7), an RRC layer of the mobile station transmits the sequence number, the version number and the data identifier to the physical layer of the mobile station through a CPHY-HARQ-REQ primitive.

8.   The data processing method as recited in claim 1, wherein the step d) includes the steps of:

d1) performing a transmission scheduling for transmitting the received RLC-PDU and the HARQ-RLC-Control-PDU;

d2) allocating the TFI1 and the TFI2 to the RLC-PDU and the HARQ-RLC-Control-PDU, respectively, and changing the RLC-PDU and the HARQ-RLC-Control-PDU to the first MAC-PDU and the second MAC-PDU, respectively; and

d3) transmitting the first and the second MAC-PDU and the allotted TFI1 and the TFI2 to the physical layer of the base transceiver station (BTS).

9.   The data process methods for hybrid ARQ type II/III on a downlink of a wideband radio communication system as recited in claim 8, wherein the step e) includes the steps of:

e1) transforming the first MAC-PDU and the second MAC-PDU which have the RLC-PDU and the HARQ-RLC-Control-PDU, respectively, to a radio frame through the coding, the interleaving and the modulating process, then transmitting the radio frame to a mobile station through the physical channel; and

e2) transmitting the received TFI1 and the TFI2 to the mobile station through the physical layer.

10.   The data processing method as recited in claim 1, wherein the RLC layer of the SRNC generates a relation indicator which denotes a relationship between the RLC-PDU and the HARQ-RLC-Control-PDU, and transmitting the relation indicator, the RLC-PDU and the HARQ-RLC-Control-PDU with each PDU.

11.   The data processing methods for hybrid ARQ type II/III on a downlink of a wide-band radio communication system as recited in claim 10, wherein the relation indicator is made for each of the RLC-PDU and the HARQ-RLC-Control-PDU which is generated based on a header part, and has the same value for related PDU's.

12.   The data processing method as recited in claim 11, wherein MAC-C/SH of the CRNC treats related RLC-PDU and HARQ-RLC-Control-PDU, at the same time by using the

relation indicator, when the relation indicator is received with each PDU through the MAC-D of the SRNC.

13.   The data processing method as recited in claim 12, wherein the logical channel is a dedicated traffic channel (DTCH) logical channel for transmitting the RLC-PDU and the HARQ-RLC-Control-PDU.

14.   The data processing method as recited in claim 12, wherein the logical channel includes the DTCH and a dedicated control channel (DCCH) logical channels for transmitting the RLC-PDU and the HARQ-RLC-Control-PDU, respectively.

15.   The data processing method as recited in claim 12, wherein the transport channel is a downlink shared channel (DSCH) for transmitting the RLC-PDU and the HARQ-RLC-Control-PDU.

16.   The data processing method as recited in claim 12, wherein the physical channel is PDSCH for transmitting the first and the second MAC-PDU and DPCH for transmitting the TFI1 and the TFI2.

17.   The data processing method as recited in claim 12, wherein the radio network is an asynchronous radio network.

18.   A computer readable data recording media having instructions for a data processing method for a hybrid ARQ type II/III on a downlink of a wide-band radio communication system, wherein a serving radio network controller (hereinafter, referred to as a SRNC) which is directly connected to a user equipment to allocate wireless resources to the user equipment and provides services by interlocking with a wireless communication core network in

case of a call connection and a controlling radio network controller (hereinafter, referred to as a CRNC) which controls a sharing channel of a radio network are located on the different radio network, comprising the functions of:

a) generating a radio link control – protocol data unit (hereinafter, referred to as a RLC-PDU) in a radio link control (hereinafter, referred to as a RLC) layer of the SRNC and generating a protocol data unit having RLC-PDU information needed for supporting the hybrid ARQ type II/III based on a header of the RLC-PDU (hereinafter, referred to as a HARQ-RLC-Control-PDU);

b) transmitting the RLC-PDU and the HARQ-RLC-Control-PDU to a medium access control dedicated (hereinafter, referred to as a MAC-D) treating a general user part of a MAC layer through a logical channel;

c) transmitting the RLC-PDU and the HARQ-RLC-Control-PDU of the MAC-D of the SRNC to a medium access control common/shared (hereinafter, referred to as a MAC-C/SH) treating common/shared channel part on the MAC layer of the CRNC;

d) transforming the RLC-PDU and the HARQ-RLC-Control-PDU of the MAC-C/SH of the CRNC to a transmission block and transmitting it to a physical layer of a base station through a transport channel; and

e) processing the transmission block to a radio transmission form in the physical layer of the base station and transmitting it to the base station through the physical layer.

19. The computer readable data recording media as recited in claim 18, further comprising the function of: f) storing the RLC-PDU to a buffer, extracting the RLC-PDU stored

in the buffer by using the HARQ-RLC-Control-PDU, decoding the extracted RLC-PDU and transmitting the RLC-PDU to an upper layer, then transmitting a response to the radio network

20.   The computer readable data recording media as recited in claim 19, wherein the function f) comprises the functions of:

f1) receiving a radio frame having the RLC-PDU and the HARQ-RLC-Control-PDU transmitted from the radio network through a physical channel, and receiving information required for performing a physical layer operation;

f2) transforming a radio frame, which has the TFI2 and the HARQ-ROC-Control-PDU, to the second MAC-PDU through the demodulation, the deinterleaving and the decoding process and transmitting it to a MAC-C/SH of the user equipment (UE) through a transport channel;

f3) in case of performing the step f2), storing a radio frame having the RLC-PDU to a buffer, generating a data identifier for identifying the RLC-PDU stored in the buffer and transmitting the data identifier and the second MAC-PDU to the MAC-C/SH of the mobile station;

f4) receiving the second MAC-PDU, which has the HARQ-RLC-Control-PDU, and a data identifier from the physical layer of the mobile station, transforming the second MAC-PDU to the HARQ-RLC-Control-PDU and transmitting the HARQ-RLC-Control-PDU and the data identifier to MAC-D of the mobile station;

f5) transmitting the HARQ-RLC-Control-PDU and the data identifier to the RLC layer of the mobile station through a logical channel;

f6) interpreting the received HARQ-RLC-Control-PDU to extract a sequence

number and a version number and transmitting the sequence number, the version number and the data identifier to a radio resource control (RRC) layer of the mobile station;

f7) transmitting the sequence number, the version number and the data identifier to the physical layer of the mobile station;

f8) extracting a radio frame, which has the RLC-PDU stored in the buffer, and the TFI1, by using the data identifier, and by using the TFI1, the sequence number and the version number, transforming the extracted radio frame to MAC-PDU through the modulation, the deinterleaving and the decoding process, and then transmitting the radio frame to MAC-C/SH of the mobile station;

f9) transforming the MAC-PDU to the RLC-PDU, after interpreting the MAC-PDU by the MAC-C/SH of the mobile station, and transmitting the RLC-PDU to the MAC-D of the mobile station;

f10) transmitting the RLC-PDU to an RLC layer of the mobile station, through a logical channel; and

f11) transmitting the RLC-PDU received from the RLC layer of the mobile station, after interpreting the RLC-PDU and transmitting the response to the radio network.